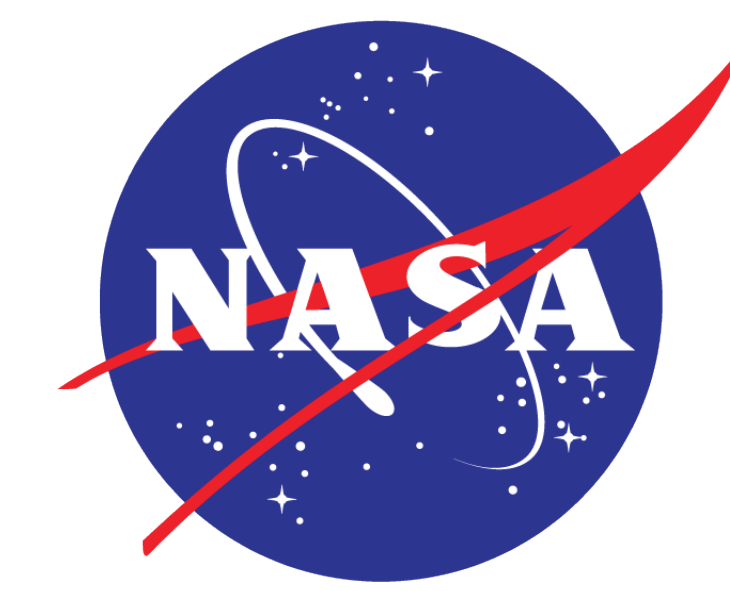




Chronic hypergravity induces changes in the dopaminergic neuronal system in *Drosophila melanogaster*.

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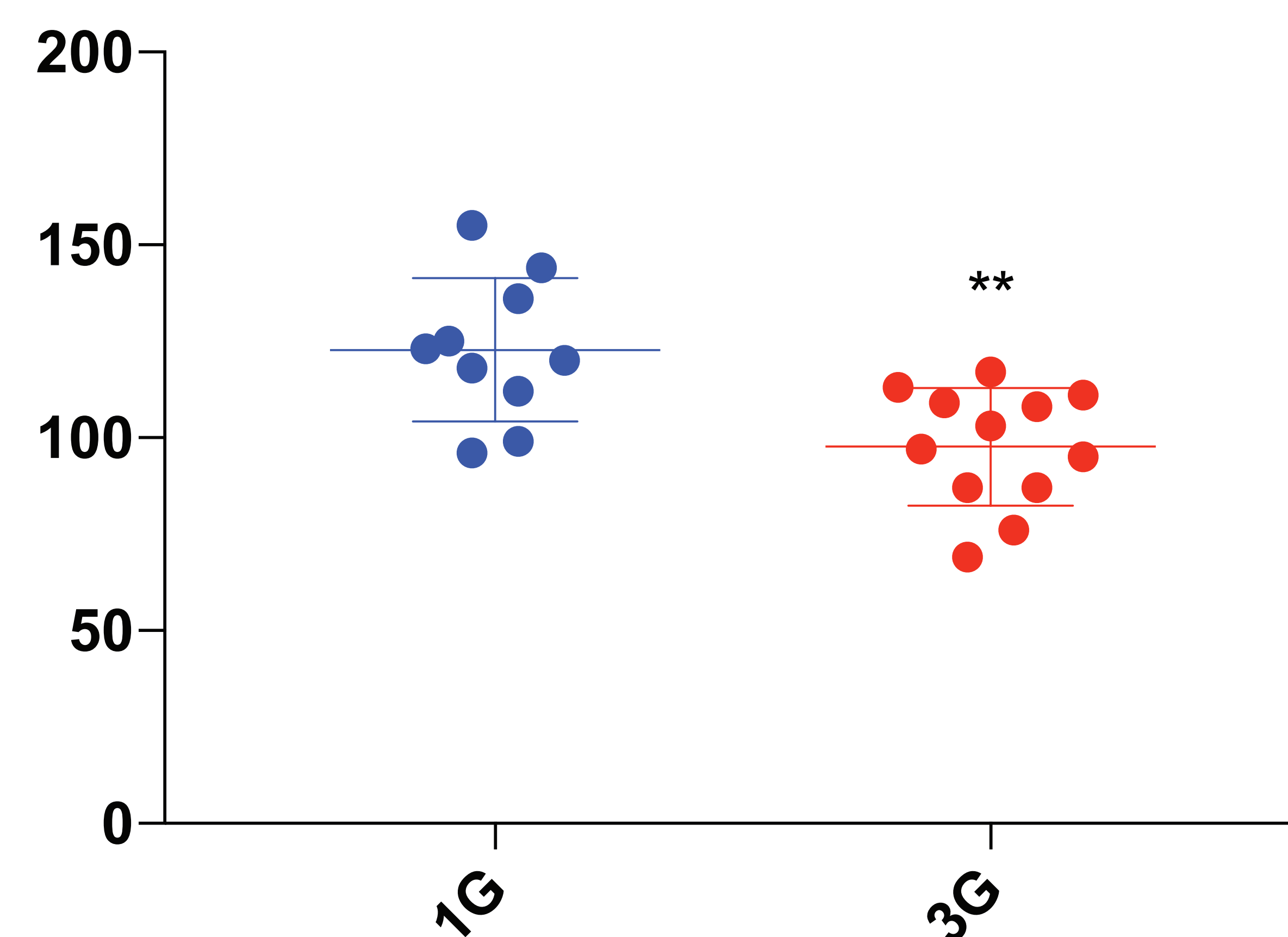


Introduction

Upon atmospheric exit/re-entry and during training, astronauts are subjected to temporary periods of hypergravity, which has been implicated in the activation of oxidative stress pathways contributing to mitochondrial dysfunction and neuronal degeneration. The pathogenesis of Parkinson's disease and other neurodegenerative disorders is associated with oxidative damage to neurons involved in dopamine systems of the brain. Our study aims to examine the effects of a hypergravitational developmental environment on the degeneration of dopaminergic systems in *Drosophila melanogaster*.

Preliminary Results

Development - 18 Days

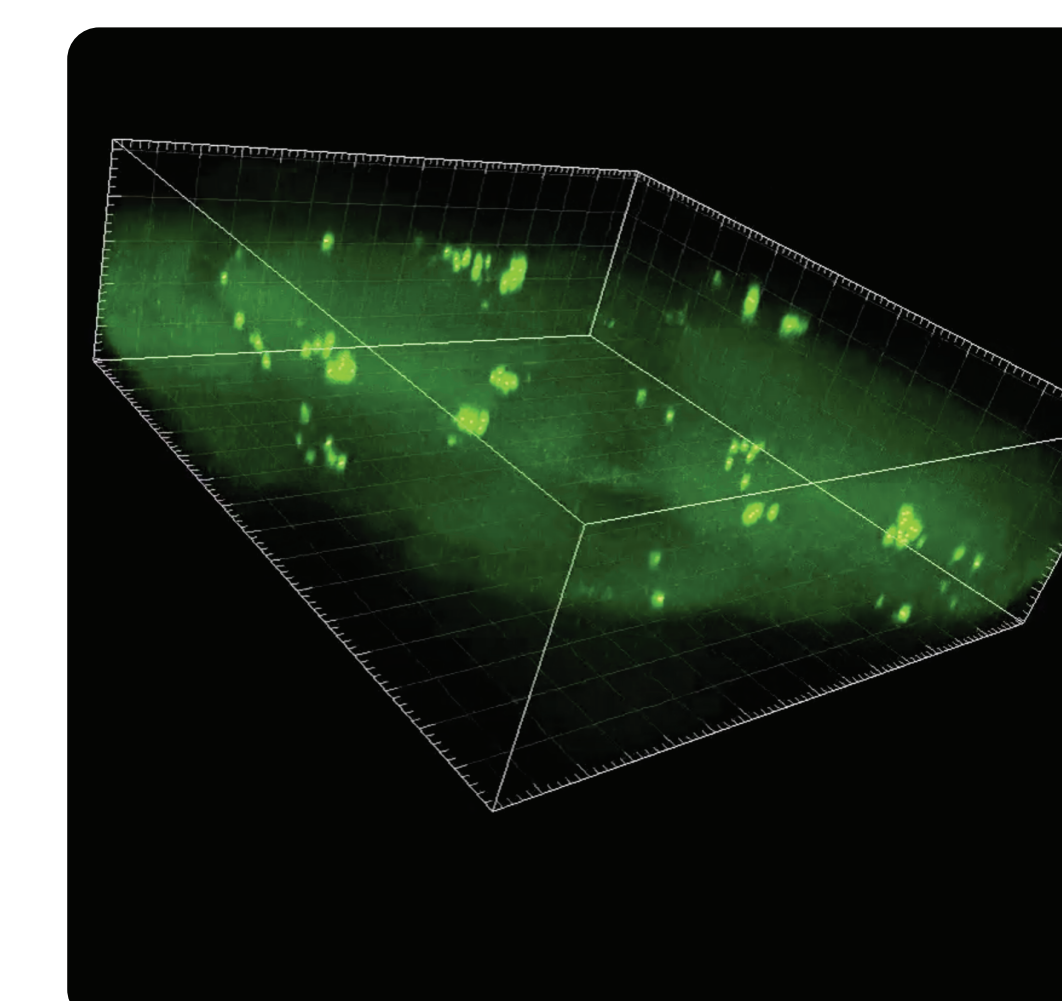
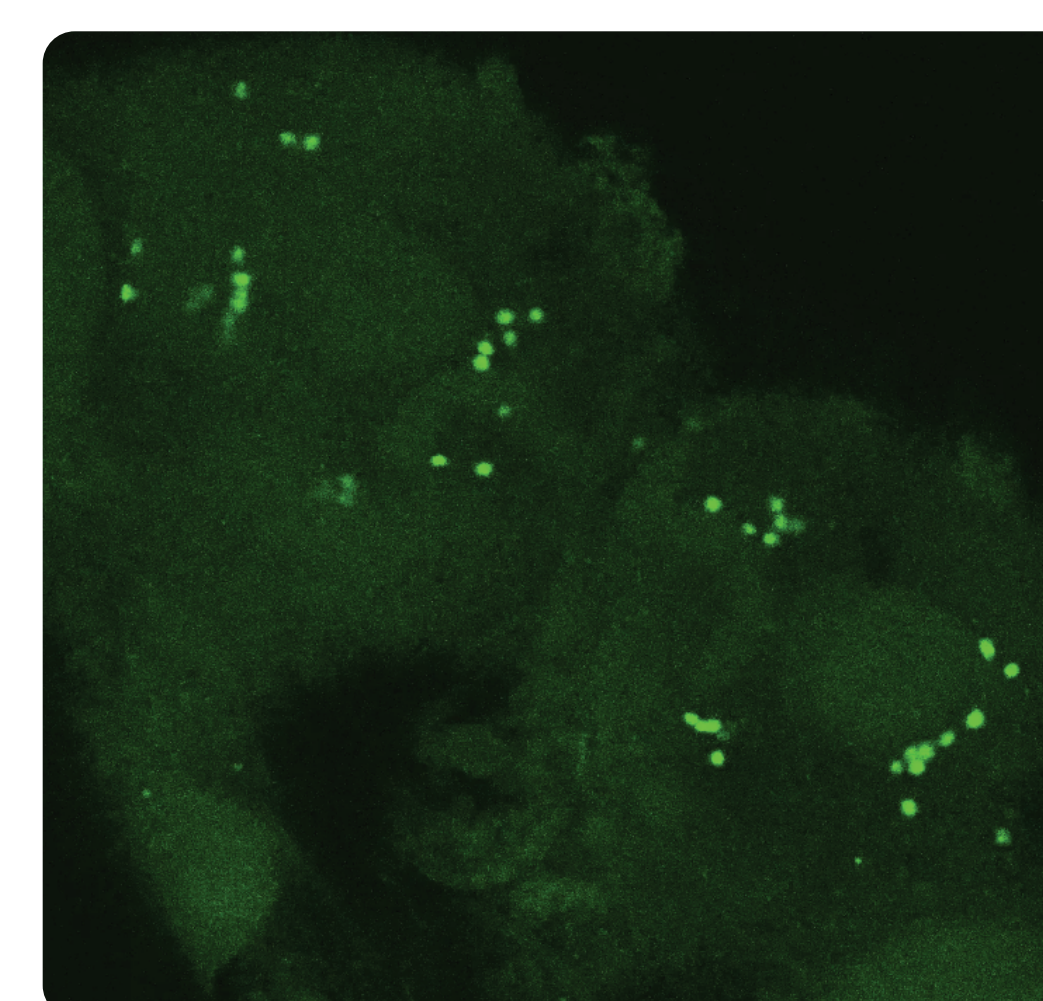
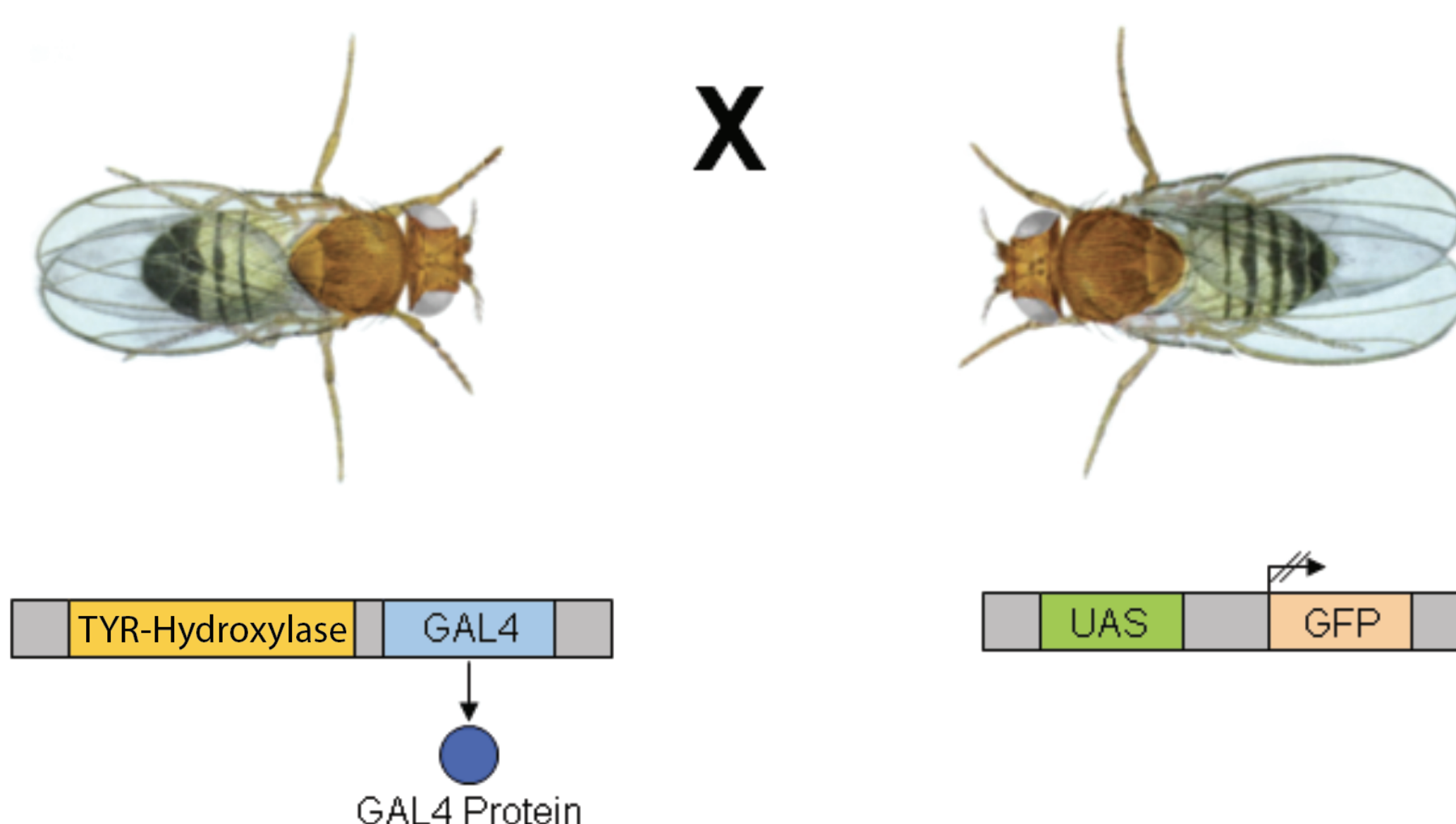
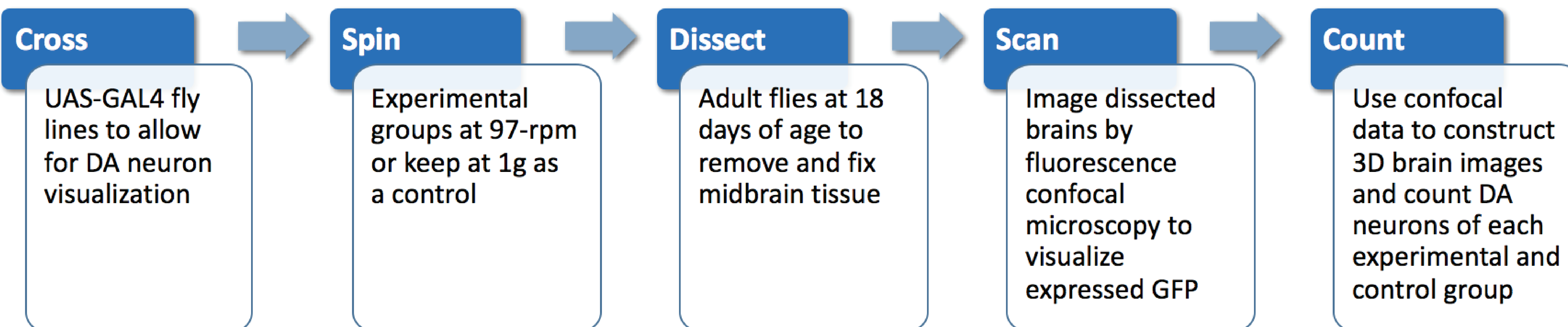


Observed decreases in DA neuron counts with chronic 3g exposure throughout development.

- Compared dopaminergic neuron counts between flies raised from early development through 15 days of adulthood fully in either a 1g or 3g environment
- Exposure to hypergravity resulted in a significant reduction in observed DA neuron count ($p = 0.003$)

> Flies kept in 1g had on average higher observed GFP-tagged nuclei (mean = 122.8)
> Flies kept in 3g had on average lower observed counts (mean = 97.7)

Methodology



Future Directions

- Aim to clarify the mechanism of neuronal damage
- Examine the possibility of chemical measures to counteract degeneration
- Expand our knowledge of DA degeneration to in-

References

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